CLAIMS

1. An optical condenser device comprising:

a first light source having a first semiconductor laser array with a plurality of active layers aligned in parallel in a first direction, a first collimator lens for collimating a plurality of beams emitted from the plurality of active layers in a plane perpendicular to the first direction, and a first beam converter for receiving the beams collimated by the first collimator lens to rotate the transverse section of each beam by substantially 90°;

a second light source having a second semiconductor laser array with a plurality of active layers aligned in parallel in a second direction, a second collimator lens for collimating a plurality of beams emitted from the plurality of active layers in a plane perpendicular to the second direction, and a second beam converter for receiving the beams collimated by the second collimator lens to rotate the transverse section of each beam by substantially 90°; and

a first optical combiner for combining the beams from the first light source with the beams from the second light source, the first optical combiner having one or more transmitting portions for receiving and transmitting the beams emitted from the first beam converter and one or more reflecting portions for receiving and reflecting the beams emitted from the second beam converter to combine the beams

transmitted through the one or more transmitting portions with the beams reflected by the one or more reflecting portions.

2. The optical condenser device according to claim 1, wherein the plurality of active layers are aligned at intervals of no more than 500 μm.

3. The optical condenser device according to claim 1 or 2, wherein the first optical combiner has a plurality of the transmitting portions which are in one-to-one correspondence with the active layers of the first light source, and a plurality of the reflecting portions which are in one-to-one correspondence with the active layers of the second light source,

wherein the plurality of transmitting portions and the plurality of reflecting portions are both strip-like in form, and

wherein the first optical combiner is a flat plate having the plurality of transmitting portions and the plurality of reflecting portions positioned alternately.

4. The optical condenser device according to claim 3, wherein the first optical combiner is inclined at an angle of 45° with respect to the central axes of both the beams emitted from the active layers of the first light source and the beams emitted from the active layers of the second light source,

wherein the front surface of the first optical combiner

opposes the first light source, and

wherein the back side of the first optical combiner opposes the second light source.

5. The optical condenser device according to any of claims 1 to 4, further comprising:

a third light source having a third semiconductor laser array with a plurality of active layers aligned in parallel in a third direction, a third collimator lens collimating a plurality of beams emitted from the plurality of active layers in a plane perpendicular to the third direction, and a third beam converter for receiving the beams collimated by the third collimator lens and rotating the transverse section of each beam by substantially 90°; and

a second optical combiner having one or more transmitting portions for receiving and transmitting the beams combined by the first optical combiner and one or more reflecting portions for receiving and reflecting the beams emitted from the third beam converter to combine the beams transmitted through the one or more transmitting portions and the beams reflected by the one or more reflecting portions.

6. The optical condenser device according to claim 5, wherein the second optical combiner has a plurality of the reflecting portions which are in one-to-one correspondence with the active layers of the third light source,

wherein the one or more transmitting portions and the plurality of reflecting portions are both strip-like in form, and

wherein the second optical combiner is a flat plate having the one or more transmitting portions and the plurality of reflecting portions positioned alternately.

7. The optical condenser device according to any of claims 1 to 4, further comprising:

a third light source having a third semiconductor laser array with a plurality of active layers aligned in parallel in a third direction, a third collimator lens collimating a plurality of beams emitted from the plurality of active layers in a plane perpendicular to the third direction, and a third beam converter receiving the beams collimated by the third collimator lens and rotating the transverse section of each beam by substantially 90°; and

a second optical combiner having one or more transmitting portions for receiving and transmitting the beams emitted from the third beam converter and one or more reflecting portions for receiving and reflecting the beams combined by the first optical combiner to combine the beams transmitted through the one or more transmitting portions and the beams reflected by the one or more reflecting portions.

8. The optical condenser device according to claim 7, wherein the second optical combiner has a plurality of

the transmitting portions which are in one-to-one correspondence with the active layers of the third light source,

wherein the plurality of transmitting portions and the one or more reflecting portions are both strip-like in form, and

wherein the second optical combiner is a flat plate having the plurality of transmitting portions and the one or more reflecting portions positioned alternately.

9. The optical condenser device according to claim 6 or 8, wherein the second optical combiner is inclined at an angle of 45° with respect to the central axes of both the beams combined by the first optical combiner and the beams emitted from the active layers of the third light source,

wherein the front surface of the second optical combiner opposes the first optical combiner, and

wherein the back surface of the second optical combiner opposes the third light source.